

In re Application of:

Su et al.

Application No.: 10/667,776

Filed: September 22, 2003

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Atty Docket No.: INTEL1340-1(P14243X)

REMARKS

In the May 17, 2005 Office Action, the specification was objected to and claims 1-10 and 31-33 were rejected. This Response amends the specification. Claims 11-30 have been canceled without prejudice or disclaimer. Claims 1 and 31 have been amended. Subsequent to the entry of the present amendment, claims 1-10 and 31-33 are pending and at issue. These amendments and additions add no new matter as the claim language is fully supported by the specification and original claims. Reconsideration of the application is respectfully requested in view of the above amendments and the following remarks.

I. Amendment of the specification

The specification was objected to as containing reference to an URL on the internet and the Applicants were requested to remove any active hyperlinks in the specification.

Paragraphs [0023], [0033], and [0045], as designated in the application as filed, or Paragraphs [0027], [0037], and [0054], as designated in the application as published (Publication No. US 2004/0115711 A1), have been amended to delete any active hyperlinks, as directed in the Office Action, to overcome this objection.

In addition, Paragraphs [0031] and [0039], as designated in the application as filed, or Paragraphs [0035] and [0046], as designated in the application as published (Publication No. US 2004/0115711 A1), have also been amended to correct typographical errors.

Accordingly, withdrawal of the objection is respectfully requested.

II. Rejections under 35 U.S.C. §112, Second Paragraph

A. Claims 1-10 and 31-33 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject

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matter which applicant regards as the invention. The Office Action alleges that claims 1 and 31 are indefinite for failing to recite a final process step which agrees back with the preamble.

Applicants have amended claims 1 and 31 to recite a final process step with agrees with the preamble, namely, the final step of “detecting and/or identifying the analytes from the magnitude of the counterbalancing force required to maintain the cantilever in its original position.” Accordingly, Applicants request withdrawal of this rejection.

B. The Office Action alleges that claims 2-10, 32 and 33 are indefinite by way of their dependency on claims 1 and 31. Claims 1 and 31 have been amended to overcome this rejection. Accordingly, Applicants request withdrawal of this rejection.

C. Claims 1-10 and 31-33 stand rejected 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps, such as omission amounting to a gap between steps.

Applicants have amended claims 1 and 31 to recite a final process step, namely, “detecting and/or identifying the analytes from the magnitude of the counterbalancing force required to maintain the cantilever in its original position.” Accordingly, Applicants request withdrawal of this rejection.

III. Rejections under 35 U.S.C. §102

Claims 1-9 and 31-33 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Thundat (U.S. Patent No. 6,016,686, issued January 25, 2000, hereinafter “Thundat”) as evidenced by Cima et al. (US 2002/0048610, April 25, 2002, filed January 8, 2001, hereinafter “Cima”). Applicants have amended claims 1 and 31 to recite a final process step of “detecting and/or identifying the analytes from the magnitude of the counterbalancing

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force required to maintain the cantilever in its original position.” Applicant traverses this rejection as it may apply to the amended claims.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Office Action states that Thundat discloses that the detection of molecular interaction is determined from the stress produced on the cantilever, resulting in bending (or deflection) (Thundat, col. 4, lines 64-65). While Thundat discusses bending (or deflection) of the cantilever, nowhere in Thundat does it disclose “imposing a counterbalancing force to restore the cantilever to its original position” or “detecting and/or identifying the analytes from the magnitude of the counterbalancing force required to maintain the cantilever in its original position”, as required in amended claims 1 and 31.

The Office Action also refers to a second reference, Cima, stating that “piezoelectric detection is known in the art as detecting the deflection of a cantilever wherein feedback mechanism is employed to maintain the tip of the cantilever at a constant force or constant height (or neutral position) [0257, Cima *et al.*]” and that “the feedback mechanism which allows the cantilever tip to be maintained at a constant height (or neutral position) would necessarily require a control system operably connected to the detection unit” (emphasis in original).

A closer review of Cima discloses that it is directed to an Atomic-Force Microscopy (AFM) used to obtain a three-dimensional image of the topography of a sample surface, and that “a sharp tip is scanned over a surface with feedback mechanisms that allow the piezoelectric scanners to maintain the tip at a constant force (to yield height information) or constant height (to yield force information) above the surface.” (Cima, [0257]) The constant height of Cima should

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not be considered a neutral position, as inferred by the Office Action. The cantilever tip of Cima is used to measure the surface contours, stating "As the tip scans the sample surface, bobbing up and down with the contours of the surface, the laser beam is deflected off the attached cantilever into a dual-element photodiode." (Cima, [0257]). This is not the same as "imposing a counterbalancing force to restore the cantilever to its original position" or "detecting and/or identifying the analytes from the magnitude of the counterbalancing force required to maintain the cantilever in its original position", as required in amended claims 1 and 31.

Thus, Thundat as evidenced by Cima fail to anticipate the claimed apparatus because both references, individually or in concert, fail to teach each and every element of the claims. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) is respectfully requested.

IV. Rejections under 35 U.S.C. §103

Claim 10 stands rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Thundat (U.S. Patent No. 6,016,686, issued January 25, 2000) in view of Binning et al. (U.S. Patent No. 6,079,255, issued June 27, 2000).

The Office Action alleges that "Thundat discloses an apparatus comprising: a) at least one cantilever (Figure 1); b) at least one probe attached to said cantilever, wherein said probes are disclosed as being enzymes, peptides, nucleic acids, antibody, etc. (column 7, lines 1-10); c) a first electrode and a second electrode (column 6, lines 33-40); and a DC power supply (column 6, line 40)" but that "Thundat does not explicitly disclose that counterbalancing force is magnetic.". The Office Action further alleges that with "regard to the cantilever comprising an magnetic counterbalancing, Binning et al. discusses a well-known actuators such as piezoceramic (or piezoelectric) actuators (column 5, lines 15-16) and magnetic induction/magneticmotive force (column 5, lines 39-48), teaching the instant claim 10."

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To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success. Third, the prior art must teach or suggest all of the recited claim limitations. Of course, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure.

As discussed above, Applicant has amended claim 1 and shown that Thundat fails to teach each and every element of amended claim 1. Claim 10 depends on claim 1, and should be allowable for at least those same reasons. The addition of Binning et al cannot remedy the failure of Thundat to render the invention obvious, and the combination of them does not disclose or suggest every limitation of claim 10 (with amended claim 1). Accordingly, reconsideration and withdrawal of the rejection is therefore respectfully requested.

V. Provisional Double Patenting Rejection under 35 U.S.C. §101

Claims 1-10 and 31-33 stand provisionally rejected under 35 U.S.C. §101 as being unpatentable over claims 1-10 and 31-33 of co-pending application Serial No. 10/254,201 (the '201 application). Applicant respectfully traverses the objection.

Applicants note that a statutory type (35 U.S.C. §101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope (see MPEP 804.2).

In a Response to a Final Office Action mailed April 4, 2005 in the co-pending '201 application, Applicants canceled claims 1-10 and 31-33. Therefore, claims 1-10 and 31-33 in the

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present application are no longer coextensive in scope with the claims pending in the '201 application. Accordingly, Applicant requests withdrawal of this rejection.

VI. Conclusion

In view of the above amendments and remarks, reconsideration and favorable action on all claims are respectfully requested. In the event any matters remain to be resolved, the Examiner is requested to contact the undersigned at the telephone number given below so that a prompt disposition of this application can be achieved. No fee is believed due in connection with this Response. However, The Commissioner is hereby authorized to charge any fees that may be associated with this communication, or credit any overpayment to Deposit Account No. 07-1896.

Respectfully submitted,

Date: August 17, 2005

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